

**ILLINOIS COMMERCE COMMISSION**

**DOCKET NO. 13-\_\_\_\_\_**

Direct Testimony of

**CAMERON ALDEN**

Submitted on Behalf of  
Aqua Illinois, Inc.

April 30, 2013

Aqua Exhibit 2.0

ILLINOIS COMMERCE  
COMMISSION  
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**CAMERON ALDEN**

**Submitted on Behalf of**

**AQUA ILLINOIS, INC.**

**I. INTRODUCTION AND BACKGROUND**

**Q. Please state your name and business address.**

**A. L. Cameron Alden Jr., 1000 South Schuyler Avenue, Kankakee, Illinois, 60901.**

**Q. By whom are you employed and in what capacity?**

**A. I am the Regional Engineer for Aqua Illinois, Inc. ("Aqua" or the "Company").**

**Q. Please state your educational, professional and business background and experience.**

**A. I received a Bachelor of Science degree in civil engineering from Texas A&M in College Station, TX in 1993. I am a registered professional engineer in the state of Illinois. I am a member of the American Water Works Association and the American Society of Civil Engineers. I have 19 years of experience in the public works, water and wastewater, and construction industry. From 1994 until December 2004, I worked for the City of Danville, IL beginning as a resident engineer and culminating as the City Engineer for the last 5 years of my employment. My duties ranged from overseeing the planning, design, and construction of numerous road, water, and sewer improvements to oversight and planning for the City's Public**

Works capital budget and construction. In December of 2004, I was employed by Aqua as the Engineer/Distribution manager for the Vermilion Division. In May 2006, I became the VP and Division Manager for the Vermilion Division. In September 2006, I was promoted to Regional Engineer, which is the position I currently hold.

**Q. What are your responsibilities as Regional Engineer for Aqua?**

**A.** As Regional Engineer, I am responsible for planning, design, and construction of the various water, wastewater, and general facilities for the Company. This work also includes the administering of the capital program for the Company, and coordinating the design and construction services

## **II. PURPOSE OF TESTIMONY**

**Q. What is the purpose of your testimony in this proceeding?**

**A.** Aqua is proposing tariffs that establish riders for the recovery of costs associated with investment in Qualifying Infrastructure Plant ("QIP") for its Willowbrook Water, Willowbrook and Candlewick Sewer, University Park Water, University Park and Tri-Star Estates Sewer, Candlewick and Fairhaven Estates Water, Oak Run Water, and Ellwood Greens Sewer divisions. The purpose of my testimony is to provide certain of the information required by Part 656.90(b) of the Commission's Rules, 83 Ill. Adm. Code 656.90(b), in connection with Aqua's proposal. Specifically, I provide information related to the history of current replacement rates of qualifying plant, the history of failure, by location, for the applicable rate zones, the reason for each increase in the rate of replacement, Aqua's specific plans for future replacements, and explanations for any changes in the expected rates of investment in QIP, as

required by Rules 656.90(b)(1)-(4) and (6). Aqua witness Paul Hanley (Aqua Ex. 1.0) provides information related to the remaining requirements of Rule 656.90(b).

**III. HISTORY OF QIP REPLACEMENT**

**Q. What do Rules 656.90(b)(1) through (3) require?**

**A.** I am not an attorney. However, I understand Rules 656.90(b)(1) and (2) require that Aqua prepare and provide a history of current replacement rates of qualifying plant, as well as history of failure, by location, for the qualifying rate zone, and that it provide five years of data by year for certain enumerated categories of water and sewer plant. Rule 656.90(b)(3) requires Aqua to explain each increase in any rate of replacement.

**Q. Has Aqua analyzed the history of the current replacement rates of the QIP for the service divisions at issue?**

**A.** Yes. Aqua Exhibit 2.1 shows the history of current replacement rates for Water Main (transmission and distribution) Replacements and Relocations, Service Replacements, Meter Replacements and Meter Setting Replacements, and Hydrant Replacements, for the five-year period 2008-2012 for Aqua's Willowbrook, University Park, Candlewick and Fairhaven Estates, and Oak Run water divisions. Aqua Exhibit 2.1 also shows the history of current replacement rates for Collecting Sewers Force, Collecting Mains, and Sewer Services for the five-year period 2008-2012 for Aqua's Willowbrook and Candlewick, University Park and Tri-Star Estates, and Elwood Green sewer divisions. Aqua Exhibit 2.1 also shows a summary of the relevant facilities.

63 Q. **What has been the replacement rate during this period for water main and water**  
64 **main relocations?**

65 A. Outside of a water main relocation in conjunction with IDOT's 394 and Rt 1  
66 reconstruction, no sizeable water main replacement has occurred in the divisions listed above.  
67 The result is an average replacement of 240 feet per year, less than 0.1% annually, for the  
68 systems pertinent to this filing.

69 Q. **Has Aqua analyzed the water main failures for the divisions requested in this**  
70 **docket?**

71 A. Yes. Aqua Exhibit 2.2 provides the history of failure for each of the water divisions  
72 listed above, for the 2008-2012 period. The average number of breaks during this time was 19  
73 breaks per 100 miles. The highest average was in the Fairhaven Estates division at 352 breaks  
74 per 100 miles. The suggested industry standard performance goal is no more than 15 reported  
75 breaks and leaks per 100 miles of utility distribution and transmission piping per year. Two  
76 systems meet this standard goal while three fell considerably short.

77 Q. **Discuss the replacement of hydrants during the five-year period of 2008-2012.**

78 A. Replacement of hydrants has been minimal in the divisions in which Aqua proposes the  
79 QIP rider be implemented. The hydrants are typically replaced due to failure or being damaged  
80 by third parties.

81 Q. **Discuss the replacement of services during the five-year period of 2008-2012.**

82 A. Replacement of services is shown in Aqua Exhibit 2.1. These amounts include partial  
83 and full replacement of service lines. The majority of the services in the state are copper, but

84 other types include plastic, lead, and galvanized steel. The vast majority of new services and  
85 replacements are copper service lines.

86 Q. **Discuss the replacement of meters during the five-year period of 2008-2012.**

87 A. Replacement of meters is shown in Aqua Exhibit 2.1.

88 Q. **Discuss the replacement of gravity sewers during the five-year period of 2008-2012.**

89 A. Replacement of sewers is shown in Aqua Exhibit 2.1. Outside of one stretch of gravity  
90 replacement in the University Park system, no significant length of gravity sewer has been  
91 replaced in the areas of the proposed QIP rider.

92 Q. **Discuss the replacement of force mains during the five-year period of 2008-2012.**

93 A. There has been no replacement of force mains in the past five-year period other than spot  
94 repairs/replacements.

95 Q. **Discuss the replacement of sewer services during the five-year period of 2008-2012.**

96 A. Replacement of services is shown in Aqua Exhibit 2.1. Per approved tariff, Aqua owns  
97 the service lateral in only the Candlewick division.

98 **IV. FUTURE QIP REPLACEMENT PLAN**

99 Q. **What do Rules 656.90(b)(4) and (6) require?**

100 A. Again, I am not an attorney. However, I understand Rule 656.90(b)(4) requires Aqua to  
101 provide its specific plans for future replacements, including a schedule showing the replacement  
102 projects listed by priority. Rule 656.90(b)(6) requires a discussion of any change in the rates of  
103 investment in QIP for the forecasted period as compared to the historical period.

104 Q. **Has Aqua analyzed its QIP replacement needs?**

105 A. Yes. Descriptions of the QIP replacement projects expected to be placed in service in  
106 2014 are presented in Aqua Exhibit 2.3. The projects are listed in order of priority. In every  
107 system except Oak Run, where hydrants will be a major component, the focus of QIP  
108 replacements will be collection or distribution mains. The criteria used in the project selection  
109 and prioritization included pressure, leaks, fire flow, age, material type, water quality, customer  
110 complaints, and any known operational issues.

111 Q. **What is Aqua's plan to change its proposed replacement schedule for water mains**  
112 **and relocations?**

113 A. Aqua intends to increase investment in replacing worn out and deteriorated mains for the  
114 reasons discussed by Mr. Hanley (Aqua Ex. 1.0). Over the next five years (2014-2018), Aqua  
115 plans to spend approximately \$992,000 to replace various size water mains within this proposed  
116 QIP filing. Based on Aqua's experience in its Kankakee divisions, if the QIPS rider is approved,  
117 approximately 2,300 feet of water main would be replaced in Willowbrook, approximately 3,850  
118 feet of main would be replaced in University Park, and approximately 4,350 feet of main would  
119 be replaced in the Candlewick and Fairhaven rate area. (Given the adequacy of the main in Oak  
120 Run, hydrant replacement would be the focus in that area.) The 2 miles of replacement main  
121 would equate to approximately 2% of the listed systems.

122 Q. **What is the proposed replacement schedule for hydrants?**

123 A. The majority of hydrants replaced under the QIP rider would be done in conjunction with  
124 main replacements or relocations done as part of the QIP filing, with the exception of Oak Run.  
125 Oak Run has approximately 150 Kennedy brand fire hydrants from the 1980s, and they are



126 reaching the end of their useful life. In Oak Run, Aqua would look to replace one-third (1/3) of  
127 these hydrants within the next five years through the QIPS rider. At an estimated cost of \$4,500  
128 per hydrant, \$225,000 would be budgeted for hydrant replacements should the QIPS rider be  
129 approved.

130 Q. **What is the proposed replacement schedule for services?**

131 A. The majority of service line replacements done under the QIP rider would be expected to  
132 be service renewals in conjunction with mains replaced as part of the QIP filing that year.  
133 Routine service line replacements would continue to be performed as needed outside of any  
134 QIPS rider filings and paid for out of the service renewal budget. No major change is expected  
135 in the rate of replacement.

136 Q. **What is the proposed replacement schedule for meters?**

137 A. The continued annual costs for future meter replacements not performed as part of a QIP  
138 rider filing would be paid for out of the meter replacement budget. No major change is expected  
139 in the rate of replacement.

140 Q. **What is the proposed replacement schedule for gravity sewer collecting mains?**

141 A. The planned level of main replacement is higher than previous years, and is consistent  
142 with Aqua's planned effort to reduce inflow and infiltration (I&I) and to reduce the potential for  
143 back-ups and overflows, thus upgrading the level of service and reliability for our customers.

144 Q. **What is the proposed replacement schedule for collecting sewers (force mains)?**

145 A. Force main replacements typically are short and in response to a specific pipe failure or  
146 leak. These repairs are usually less than 30 feet in any year. No major force main replacements

147 have been identified for the next five years that are planned to be done as part of QIP. A  
148 replacement/relocation project is being pursued currently for the Willowbrook division, but it is  
149 expected to be completed prior to implementation of a QIP rider.

150 Q. **What is the proposed replacement schedule for sanitary sewer services?**

151 A. Except for Candlewick, the sanitary sewer service lateral is the property and  
152 responsibility of the property owner. Except for specific pipe failures, there is not a planned  
153 lateral replacement program needed in Candlewick. When a sewer main is being replaced, the  
154 reconnection of the sewer lateral would be budgeted for in the overall sewer main replacement  
155 project. The cost of the lateral would be closed to the appropriate plant account.

156 V. **CONCLUSION**

157 Q. **Does this conclude your direct testimony?**

158 A. Yes.

**Replacement Quantities**

Water						Sewer					
Mains						Force Main					
	2008	2009	2010	2011	2012		2008	2009	2010	2011	2012
Candlewick	0	0	0	10	0	Willowbrook	0	0	10	10	0
Willowbrook	10	900	510	0	10	Candlewick	0	0	0	0	0
Oak Run	5	0	0	0	0	University Park	0	0	0	0	0
Fairhaven Estates	N/A	N/A	0	21	50	Tri-Star Estates	N/A	N/A	N/A	N/A	0
University Park	45	35	45	45	30	Elwood Green	N/A	N/A	0	0	0
Services						Collection Mains					
	2008	2009	2010	2011	2012		2008	2009	2010	2011	2012
Candlewick	0	13	19	17	11	Willowbrook	0	0	0	0	0
Willowbrook	0	0	6	10	5	Candlewick	0	0	0	0	0
Oak Run	0	1	2	1	1	University Park	0	0	365	0	0
Fairhaven Estates	N/A	N/A	2	0	2	Tri-Star Estates	N/A	N/A	N/A	N/A	0
University Park	1	0	5	20	10	Elwood Green	N/A	N/A	0	0	0
Meters						Services					
	2008	2009	2010	2011	2012		2008	2009	2010	2011	2012
Candlewick	188	249	294	303	364	Willowbrook	0	0	0	0	0
Willowbrook	810	98	15	12	8	Candlewick	0	0	0	0	0
Oak Run	43	101	148	168	222	University Park	0	0	0	0	0
Fairhaven Estates	N/A	N/A	7	1	0	Tri-Star Estates	N/A	N/A	N/A	N/A	0
University Park	610	299	189	832	30	Elwood Green	N/A	N/A	0	0	0
Hydrants											
	2008	2009	2010	2011	2012		2008	2009	2010	2011	2012
Candlewick	0	0	0	0	0						
Willowbrook	10	4	6	1	1						
Oak Run	2	0	2	2	5						
Fairhaven Estates	N/A	N/A	0	3	0						
University Park	10	7	8	10	12						

## Water Main Sizes by Division

	Willowbrook	University Park	Candlewick	Oak Run	Fairhaven	
36"						-
24"		2,150				2,150
20"		7,815				7,815
16"		16,975				16,975
14"		685				685
12"	30,130	57,309				87,439
10"		25,016		35,530		60,546
8"	60,521	82,561	13,041	31,351		187,474
6"	23,496	56,158	62,261	48,904	9,133	199,952
4"	629	8,081	31,290	57,552	1,050	98,602
3"		545				545
2"	262		19,100			19,362
1 1/2" & smaller						-
	115,038	257,295	125,692	173,337	10,183	Totals (feet)
	21.8	48.7	23.8	32.8	1.9	129.1 Totals (miles)
	Smaller than 6"		22.4 miles			
	6" and Greater		106.6 miles			

## Sewer Main Sizes by Division

Size	Material	Willowbrook	WB-Force	University Park	UP-Force	Candlewick	CW-Force	Elwood Green	EG - Force	Tri-Star	TS-Force	Total (feet)
36"	Concrete			2,106								2,106
33"	Concrete			4,854								4,854
30"	Concrete			16,205								16,205
28"	Steel			3,080								3,080
27"	Concrete			2,565								2,565
27"	Transite				5,312							5,312
24"	Concrete			8,516								8,516
21"	Concrete			21,955								21,955
18"	PVC			2,864								2,864
18"	Transite				268							268
18"	Clay-ASB			5,684								5,684
18"	Clay	64										64
15"	Clay	2,333										2,333
15"	Clay-ASB			4,133								4,133
15"	PVC			1,212								1,212
14"	PVC						9,151					9,151
12"	C.I.			5,250								5,250
12"	Clay	577										577
12"	Transite				14,299							14,299
12"	Clay-ASB			1,272								1,272
12"	PVC			15,578		24						15,602
10"	D.I.			60								60
10"	PVC	2,905		10,868	16,709	3,589						34,071
10"	AC					806						
10"	Clay	563										563
10"	Clay-ASB			8,572								8,572
8"	Clay	36,483								13,130		49,613
8"	Clay-ABS-PVC			134,100								134,100
8"	Armco Truss	3,345										3,345
8"	AC					820						
8"	PVC	40,131				101,265				29,063	3,400	173,859
8"	C.I.	146		1,266								1,412
6"	C.I.			3,692								3,692
6"	D.I.		13,396									13,396
6"	AC					273						
6"	PVC	4,165			9,322	242						13,729
4"	PVC		2,626		1,269							3,895
4"	C.I.			5,096	2,500							7,596
4"	AC					1,057						

2" PVC  
varies AC  
varies Clay-Truss-PVC

			2,421							2,421
					8,875					8,875
						18,350				18,350
										-
										-
										-
										-
										-
Gravity Totals (feet)	90,712	258,928		108,076		18,350		42,193		
Gravity Totals (miles)	17.2	49.0		20.5		3.5		8.0		98.2

<b>Services</b>	Willowbrook	University Park	Candlewick	Oak Run	Fairhaven
1/2 inch		1			
5/8 inch					
3/4 inch	815	1402	645		
1 inch	211	975	1202	701	88
1 1/2 inch	18	120		7	
2 inch	2	51	3	6	
1 1/4 inch					
2 1/4 inch					
3 inch		3			
4 inch		12		2	
6 inch		4			
8 inch		3			
10 inch					
12 inch		1			
<b>Totals</b>	<b>1046</b>	<b>2572</b>	<b>1850</b>	<b>716</b>	<b>88</b>

<b>Meters</b>	Willowbrook	University Park	Candlewick	Oak Run	Fairhaven
1/2 inch					
5/8 inch	883	1767	10	165	
3/4 inch	36	138	1810	544	88
5/8 x 3/4 inch	0		0		
1 inch	117	419	12	6	
1 1/2 inch	1	43	1	1	
2 inch	1	78	1		
3 inch	2	19	1		
4 inch		10			
6 inch		4			
8 inch	1	2			
10 inch					
	<b>1041</b>	<b>2480</b>	<b>1835</b>	<b>716</b>	<b>88</b>

<b>Hydrants</b>	Willowbrook	University Park	Candlewick	Oak Run	Fairhaven
4" Inlet			7	87	16
6" Inlet	224	597	31	184	16

**Water Main Statistics - 2008-2012**

	Willowbrook	University Park	Fairhaven Estates *	Oak Run	Candlewick
Miles of Main	21.8	48.7	1.9	32.8	23.8
Metered Ratio in 2012	87.5%	85.2%	58.3%	82.0%	84.0%
5 Year break avg per year from 2008-2012	5.6	12	6.7	0	0.4
5 Year break/100miles/year from 2008-2012	25.7	24.6	352.6	0.0	1.7
Main replaced (miles total) over last 5 years	0.27	0.04	0.01	0	0
Total Percent of system replaced since 2008	1.2%	0.1%	0.7%	0.0%	0.0%
Average Percent of System Replaced per Year (2008-2012)	0.25%	0.02%	0.14%	0.00%	0.00%

\* Fairhaven - recent acquisition (mid-2010)



**Main Breaks by Year**

	2008	2009	2010	2011	2012
Willowbrook	0	0	9	14	5
University Park	3	2	16	12	27
Fairhaven Estates	N/A	N/A	5	8	7
Oak Run	0	0	0	0	0
Candlewick	1	0	1	0	0

Recommendations for the University Park Water

- 1) Sullivan Street & Sierra Ct – Replace the existing 6-inch main with 8-inch DIP cement lined. This main is only 2700-ft long but has had 22-breaks from 2007 thru August 2012. The most breaks per year occurred in 2011 with 11. This equates to an average of 2,440 breaks per 100-miles for that section of main.

Main Replacement Cost	\$470,000
Service Replacement Cost (13%)	\$61,100
Hydrant Replacement Cost (3%)	\$14,100
<b>Total Project Cost</b>	<b>\$545,200</b>

- 2) Farm View Road – Replace the existing 6-inch main with 8-inch DIP cement lined. This main is 2400-ft long but has had 11-breaks from 2007 thru August 2012. The most breaks per year occurred in 2011 with 4. This equates to an average of 880 breaks per 100-miles for that section of main.

Main Replacement Cost	\$418,000
Service Replacement Cost (13%)	\$54,340
Hydrant Replacement Cost (3%)	\$12,540
<b>Total Project Cost</b>	<b>\$484,880</b>

- 3) White Oak Lane – Replace the existing 6-inch main. This main is an 1800-ft long loop and has had 13-breaks from 2007 thru August 2012. The most breaks per year occurred in 2008 with 7. This equates to an average of 2,050 breaks per 100-miles for that section of main. The pipe is situated in a tight space apartment building complex where access to the buildings will be required to remain open, thus complicating the project and adding expense. Thus, restoration expenses will be much more expensive. Thus, a replacement cost of \$200/LF is used.

Main Replacement Cost	\$360,000
Service Replacement Cost (13%)	\$46,800
Hydrant Replacement Cost (3%)	\$10,800
<b>Total Project Cost</b>	<b>\$417,600</b>

#### Recommended Action for Willowbrook Water

The Willowbrook system is subject to a higher than average number of main breaks. Customer complaints are mainly associated with taste and odor as well as low pressure. Replacement of underperforming, unreliable and undersized mains should be replaced immediately. As such, the following areas in the system would benefit from pipe replacement in the near future:

- 1) East Cedar Lane – Replace 2,330-LF of 8-inch ductile iron pipe. There have been 3 main breaks over the past three years as well as discolored water complaints on this street. Replacement will improve reliability.

Main Replacement Cost	\$405,000
Service Replacement Cost	\$52,650
Hydrant Replacement Cost	\$12,1500
<b>Total Project Cost</b>	<b>\$469,800</b>

#### Recommended Action for Oak Run Water

The Oak Run system is one of high reliability and integrity. Customer complaints are few and there are no areas that require improvements of pressure or flow rate. However, the customer meters and fire hydrants at Oak Run are nearing the end of their useful life.

- 1) There are approximately one-hundred-fifty (150) Kennedy brand fire hydrants from the 1980's that pose reliability issues and are reaching the end of their useful life. It is recommended to replace fifty (50) hydrants at a cost of \$4,500 per replacement.  
Estimated cost = \$225,000.

Oak Run and Willowbrook Water are part of the Consolidated rate zone with Vermilion and Oak Run.

[illegible]

Recommended Action for Fairhaven Water

Main breaks are a significant problem in the system; the 1950's vintage cast iron pipe is unlined and is not up to today's cement-lined ductile iron pipe standards. The pipe is deteriorated such that there is a lot of lost water in the system occurring at the pipe joints. The size of the pipe is also considered undersized by the commonly accepted standard. As such, it is recommended that the entire system (10,183-LF) be replaced with 8-inch cement-lined ductile iron main over several years.

<b>Fairhaven – Main Replacement Program</b>	
Main Replacement Cost	\$1,020,000
Service Replacement Cost	\$100,000
Hydrant Replacement Cost	\$36,000
<b>Total Project Cost</b>	<b>\$1,156,000</b>

Recommended Action for University Park Area Sewer

It is recommended that the older vitrified clay pipe in the system be systematically replaced.

- 1) Union Street. This 2400-LF gravity pipe is vitrified clay and includes eleven (11) manholes. It has had a high number of manhole overflows due to root infiltration. Replace the pipe with 12" SDR-35 PVC and six (6) of the manholes. Estimated Replacement Cost = \$408,000.
- 2) Pin Oak - Replace 2700-LF of 8-inch gravity pipe. The existing pipe is vitrified clay and includes eleven (28) manholes. It has had a high number of manhole overflows due to root infiltration. Replace the pipe with 8" SDR-35 PVC and nine (9) of the manholes. Estimated Replacement Cost = \$405,000.
- 3) Hickok - Replace 1500-LF of 12-inch gravity pipe. The existing pipe is 1971 vintage and includes six (6) manholes. It has had manhole overflows in recent years resulting in unreliability. Replace the pipe with 12" SDR-35 PVC and the manholes. Estimated Replacement Cost = \$255,000.

Recommendations for Tri-Star Area Sewer

Inflow and Infiltration in the Tri-Star sewer area is significant. Recommend lining of the remaining unlined clay main (approximately 1,800') and lining or replacing I&I prone manholes. Estimated Project Cost = \$98,000.

Tri-Star and University Park Sewers are in the same rate zone.

Recommended Action for Candlewick Sewer

- 1) Perform lining or injection grouting to reduce I/I on the Northern part of the Candlewick system. This would consist of approximately 26,000 LF of various sized main and 96 manholes. Allowing for TV investigation, reaming of deposits and trimming of taps prior to grouting an average cost of \$6.45/LF will be used. Thus:
  - a. Pipeline grouting budget: \$55, 900
  - b. Manhole grouting budget: \$40,000
  - c. Sewer lining: \$520,000

Recommendations for Willowbrook Sewer

Perform lining in two subdivisions to reduce I&I in the southern part of the system served by the Plum Creek WWTP.

- a) Dixie Dell – lining 8,140 feet of 8” sewer. Estimated cost = \$244,000
- b) Calumet Garden – lining of 6,940 feet of 8” sewer. Estimated cost = \$208,000

Willowbrook and Candlewick Sewers are in the same rate zone.

Recommended Action for Elwood Green Sewer

This system is a relatively new acquisition by Aqua and records do not exist from the previous owner. It is suspected that the collection system was unprofessionally installed using sub-standard material, pipe bedding practices, and/or inspection verification. The system has experienced I&I issues and overflows. Recommend that the entire Elwood Greens system be replaced with PVC pipe. Estimated cost to replace entire system is \$2,400,000.